

WHAT IS CLAIMED IS:

1. A composition for amplifying in vitro a target polynucleotide region of an initial linear nucleic acid molecule, wherein said composition comprises:
  - (A) a single-stranded first polynucleotide, wherein said polynucleotide (i) contains a polynucleotide region that is complementary in sequence to said target polynucleotide region, and (ii) is a circular polynucleotide or is circularizable when hybridized to said target polynucleotide region in vitro; and
  - (B) a second polynucleotide comprising said target polynucleotide region.
2. The composition of claim 1, wherein said single-stranded first polynucleotide is a circular polynucleotide.
3. The composition of claim 1, wherein said single-stranded first polynucleotide is circularizable when hybridized to said target polynucleotide region.
4. The composition of claim 3, wherein said single-stranded first polynucleotide is circularizable via the action of a ligase.
5. The composition of claim 3, wherein said single-stranded first polynucleotide is circularizable via the action of a recombinase.
6. The composition of claim 1, wherein said composition additionally comprise a template-dependent polymerase sufficient to extend a 3' terminus of a polynucleotide hybridized to said single-stranded first polynucleotide in vitro to thereby produce a template-dependent extension product and wherein said polymerase is additionally capable of causing extension-dependent strand displacement of hybridized polynucleotides.
7. The composition of claim 6, wherein said single-stranded first polynucleotide is circular.
8. The composition of claim 6, wherein said single-stranded first polynucleotide is

circularizable.

9. The composition of claim 8, wherein said single-stranded first polynucleotide is circularizable via the action of a ligase.
10. The composition of claim 8, wherein said single-stranded first polynucleotide is circularizable via the action of a recombinase.
11. The composition of claim 1, wherein said single-stranded first polynucleotide contains a modified nucleotide.
12. The composition of claim 11, wherein said modified nucleotide is a ribonucleotide.
13. The composition of claim 11, wherein said modified nucleotide is a biotinylated nucleotide.
14. A kit for amplifying in vitro a target polynucleotide region of an initial linear nucleic acid molecule, wherein said kit comprises:
  - (A) a first container, said first container containing a single-stranded first polynucleotide, wherein said polynucleotide (i) contains a polynucleotide region that is complementary in sequence to said target polynucleotide region, and (ii) is a circular polynucleotide or is circularizable when hybridized to said target polynucleotide region; and
  - (B) a second container, said second container containing a second polynucleotide comprising said target polynucleotide region.
15. The kit of claim 14, wherein said single-stranded first polynucleotide is a circular polynucleotide.
16. The kit of claim 14, wherein said single-stranded first polynucleotide is circularizable when hybridized to said target polynucleotide region.
17. The kit of claim 16, wherein said single-stranded first polynucleotide is circularizable

via the action of a ligase.

18. The kit of claim 16, wherein said single-stranded first polynucleotide is circularizable via the action of a recombinase.
19. The kit of claim 14, wherein said reagents additionally comprise a third container,  
5 said third container containing a template-dependent polymerase sufficient to extend a 3' terminus of a polynucleotide hybridized to said single-stranded first polynucleotide in vitro to thereby produce a template-dependent extension product and wherein said polymerase is additionally capable of causing extension-dependent strand displacement of hybridized polynucleotides.
- 10 20. The kit of claim 19 wherein said first or second polynucleotides contain a modified nucleotide.